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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/661,638
Filing Date: September 15, 2003
Appellant(s): HIRAIWA ET AL.

Surinder Sachar
Reg. No. 34,423
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 9 December 2008 appealing from the Office action mailed 20 August 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 6,818,105 B2	Tojo et al.	11-2004
US 4,790,859	Marumo et al.	12-1988
JP 2000-160390	Fumio et al.	6-2000

WO 01/77412

Tojo et al.

10-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-8, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/77412, whose corresponding US Patent is Tojo et al. US 6,818,105 B2(Tojo'105), in view of Marumo et al. US 4,790,859(Marumo), and further in view of JP2000-160390 (JP'390).

Tojo'105 teaches a fluorine gas generator for generating high purity fluorine gas by electrolysis of a mixed molten-salt comprising hydrogen fluoride(abstract). The fluorine gas generator of Tojo'105 comprises an electrolytic cell which is separated into an anode chamber and a cathode chamber(abstract, Fig. 1 numerals 5 and 7). Tojo'105 further teaches that the fluorine gas generator comprises absorption towers to downstream from the hydrogen and fluorine gases outlet to remove excess HF from the hydrogen gas and the fluorine gas(col. 6 lines 14-19). Fig. 1 of Tojo'105 appears to shown that the fluorine gas generator has box-shaped body.

However, the absorption towers of Tojo'105 do not explicitly read on the claimed first and second adsorption units. In addition, Tojo'105 does not explicitly teach the claimed at least three compartments for housing the electrolyzer and the adsorption units or the claimed second and third compartments directly adjacent to the first compartment.

Marumo teaches an apparatus for separating gaseous mixtures containing a first and a second gas having different chemical compositions(abstract). The gas separation

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apparatus of Marumo teaches using two adsorption towers to provide an efficient separation of a gas mixture(col. 2 lines 41-42, col. 11 lines 53-55). Marumo further teaches that the first adsorption tower is being used to separate the gas mixture while the adsorbent in the second adsorption tower is being regenerated. Later on, the process is switch where the second adsorption tower is used to separate the gas mixture while the adsorbent in the first adsorption tower is being regenerated(col. 12 lines 6-63).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the gas mixture separation apparatus of Marumo with the dual adsorption tower setup into the fluorine gas generator of Tojo'105 to remove the HF from the hydrogen gas and the fluorine gas in order to achieve efficient separation of the gas mixture as taught by Marumo and to minimize the adsorption tower down time by using one adsorption tower for gas separation while allowing the adsorbent regeneration to take place in the other adsorption tower as taught by Marumo.

JP'390 teaches separating the control system and the electroplating cell in separate rooms and the oxygen and hydrogen gases are also discharged in these separate rooms to avoid potential hazardous or unsafe conditions due to cross-contamination(paragraph [0045, 0057]). In addition, JP'390 does not require that the separate rooms for housing the control system and the electroplating cell to be located away from each other. Therefore, the examiner considers two rooms located right next to each other with a shared wall within the scope of JP'390's invention.

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the multi-room housing of JP'390 into the apparatus of Tojo'105 in view of Marumo to separately house the electrolyzer, the equipments used to process the hydrogen gas product including the first adsorption unit and the equipments used to process the fluorine gas product including the second adsorption unit in order to avoid cross contamination as taught by JP'390 (abstract, paragraph [0017]).

Regarding claims 1-2, one of ordinary skill in the art would have also found it obvious to put the hydrogen and fluorine gas product processing equipments, including the first and second adsorption units, in separate rooms on each side of and adjacent to the room for housing the electrolyzer as taught by Tojo'105 in view of Marumo and JP'390, since both sets of gas product processing equipments are directly downstream from the anode and cathode chambers and such housing arrangement would minimize the piping required to transport the gas products to respective adsorption units. Therefore, the first housing for electrolyzer as taught by Tojo'105 in view of Marumo and JP'390 is located between the second housing for the first adsorption unit as taught by Tojo'105 in view of Marumo and JP'390 and the third housing for the second adsorption unit Tojo'105 in view of Marumo and JP'390 so that the second and the third housing are not in contact with each other as claimed.

Regarding claim 3, Tojo'105 further teaches an exhaust opening(Fig. 1 numeral 19) to provide controlled atmosphere for the interior of the fluorine gas generator(col. 8 lines 16-18). Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated an exhaust opening(i.e. suction opening) to each of the three

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compartments of the fluorine gas generator as taught by Tojo'105 in view of Marumo and JP'390 in order to provide a controlled interior atmosphere in each of the electrolyzer and the hydrogen and fluorine gas post-treatment processing sections.

Regarding claim 4, Tojo'105 further teaches a buffer tank(Fig. 1 numeral 44) and a pressurizer(Fig. 1 numeral 42). Even though the buffer tank(i.e. reservoir means) and the pressurizer of Tojo'105 are located outside of the box-shaped housing instead of within the second compartment as claimed and the pressurizer of Tojo'105 locates upstream of the buffer tank instead of downstream from the buffer tank as claimed, one of ordinary skill in the art would have found the claimed reservoir and pressurizer locations obvious since it is well settled that rearrangement of parts is an obvious matter of design choice. In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975). In addition, the buffer tank and the pressurizer of Tojo'105 differs from the instant invention only in their locations, which is unpatentable because shifting the locations of the buffer tank and the pressurizer of Tojo'105 would not have modified the operation of the buffer tank and the pressurizer. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). See MPEP 2144.04. Furthermore, it would have been obvious to one of ordinary skill in the art to have incorporated the buffer tank and the pressurizer of Tojo'105 in view of Marumo and JP'390 inside the same compartment for post-treatment of fluorine gas discharge(i.e. second compartment) in order to protect the buffer tank and the pressurizer from potentially hazardous environment and conditions.

Regarding claim 5, Tojo'105 teaches that a heater is used to provide proper heating of the electrolytic cell and the heater make take any form(col. 6 lines 53-67).

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Even though Tojo'105 in view of Marumo and JP'390 do not explicitly teach that the heater is water heating device as claimed, one of ordinary skill in the art would have found it obvious to have used an water heating device in the heater of Tojo'105 in view of Marumo and JP'390 since an water heating device is a well known low cost heating device.

Regarding claim 6, even though Tojo'105 in view of Marumo and JP'390 do not explicitly teach that the electrolyzer is mounted on a transporting member, one of ordinary skill in the art would have found it obvious to have mounted the electrolytic cell of Tojo'105 in view of Marumo and JP'390 on a transporting member capable of moving the electrolytic cell in and out of the fluorine gas generator in order to allow easy access to the electrolytic cell for routine maintenance such as cleaning and replacement of parts.

Regarding claims 7-8, the adsorption unit of Tojo'105 in view of Marumo and JP'390 comprises two adsorption columns and can be operated alone as claimed. In addition, even though Tojo'105 in view of Marumo and JP'390 do not explicitly teach that the adsorption columns are mounted on transporting members as claimed, one of ordinary skill in the art would have found it obvious to have mounted the adsorption columns of Tojo'105 in view of Marumo on transporting members capable of moving the adsorption columns in and out of the first and second compartments in order to allow easy access to the adsorption columns for routine maintenance such as cleaning and replacement of parts.

Regarding claims 10 and 12, the multi-room housing as taught by Tojo'105 in view of Marumo and JP'390 reads on the claimed box-shaped body formed as a unit based on the broadest reasonable interpretation.

(10) Response to Argument

In the Appeal Brief, appellant argues that JP'390 only teaches using two separate rooms for the electroplating device and the control system to void contamination and does not teach the three separate compartments setup arranged as claimed. Appellant further argues that JP'390 is not directed to providing separate housing for isolating electrolyzer and other units as claimed.

The examiner does not find appellant's argument persuasive. As discussed in the Final Office Action mailed 20 August 2008, the concept of separately housing major components of an electrolysis unit to avoid cross-contamination is taught by JP'390. The examiner believes that it would have been within the skills of one of ordinary skill in the art to derive from the teachings of JP'390 and implement additional separate housing, when needed, to protect components of an electrolyzer unit to avoid cross-contamination. In addition, JP'390 teaches that product gases such as oxygen and hydrogen are connected separately in each of the two rooms for safety purposes. Therefore, one of ordinary skill in the art would have learned the concept of separating the product gases produced from an electrolytic process in order to improve safety by avoiding mixing of the product gases. Furthermore, the feed material hydrogen fluoride, and the product gases hydrogen and fluorine from the electrolysis unit of Tojo'105 are highly hazardous, one of ordinary skill in the art would have found it desirable to

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separate the electrolytic cell where hydrogen fluoride is being fed and two sets of adsorption towers where hydrogen and fluorine gases are separately generated in order to avoid potentially dangerous conditions due to cross-contamination of the feed material and the product gases.

Appellant further argues that unlike the instant invention JP'390 is not concerned with problem of high heat generation. Appellant further argues that none of the cited prior art recognizes and overcomes the problems as described and solved by the instant invention.

It is well settled that the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. In re Linter, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972). See MPEP 2144. Therefore, the examiner does not find appellant's argument persuasive because JP'390's reasons for providing separate housing for major components of an electrolysis unit, although different from the instant invention, still provide proper motivation to enable one of ordinary skill in the art to incorporate the teachings of JP'390 into the fluorine gas generator of Tojo'105 in view of Marumo in order to avoid cross contamination and to achieve safe operation.

Appellant further argues that Tojo'105 does not teach partition between supply system and the two discharge systems.

The examiner does not find appellant's argument persuasive because appellant's argument is based on Tojo'105 alone where the rejection is based on combination of Tojo'105, Marumo and JP'390. See MPEP 2145 (IV).

Appellant further argues Tojo'105 at Figure 1 teaches only one exhaust opening, instead of the three suction opening, one in each of the three compartments as claimed.

The examiner does not find appellant's argument persuasive because Tojo'105 teaches using an exhaust opening(Fig. 1 numeral 19) to provide controlled atmosphere for the interior of the fluorine gas generator(col. 8 lines 16-18). Therefore, one of ordinary skill in the art would have found it obvious to have incorporated an exhaust opening(i.e. suction opening) to each compartment of the multi-compartment fluorine gas generator as taught by Tojo'105 in view of Marumo and JP'390 in order to provide a controlled interior atmosphere in each of the electrolyzer and the hydrogen and fluorine gas post-treatment processing sections.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Lois Zheng/

Conferees:

/Roy King/

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Supervisory Patent Examiner, Art Unit 1793

/Gregory L Mills/

Supervisory Patent Examiner, Art Unit 1700